

25
CLAIMS

1. An output method for a plurality of devices in which each device produces, in turn, a human-discernible output, the method involving the steps of:
 - 5 a) in response to an indication that the devices are to produce their respective outputs, determining an ordering in which these outputs are to be produced, this determination being effected taking account of the relative locations of the devices and an assumed or sensed user position, and such that the device output ordering progresses from device to device, between a first-to-output device and last-to-output device, in the same sense,
10 clockwise or anticlockwise, with respect to said user position; and
 - b) causing the devices to produce their outputs in said ordering.
2. A method according to claim 1, wherein in step (a), the first-to-output device and the sense of progression from device to device are chosen to minimise the angle subtended at
15 said user position between the first-to-output device and last-to-output device.
3. A method according to claim 1, wherein the first-to-output device is set as an input parameter of the ordering determination step (a).
- 20 4. A method according to claim 1, wherein the first-to-output device is user selected at the time said indication is produced.
5. A method according to claim 4, wherein the first-to-output device is selected by the user facing towards the device concerned, the device being faced by the user at the time said
25 indication is produced being determined and its identity supplied as an input to the ordering determination process of step (a).
6. A method according to claim 3, wherein the sense of progression from device to device is chosen to minimise the angle subtended at said user position between the first-to-output
30 device and last-to-output device.

7. A method according to claim 1, wherein said user position is the actual position of the user at the time said indication is produced, this position being measured and supplied as an input to the ordering determination process of step (a).

5 8. A method according to claim 7, wherein said indication is a sound produced by the user, this sound being detected at said devices and used to locate the user position.

9. A method according to claim 1, wherein said user position is a known location, the arrival of the user at this location being detected to produce said indication.

10

10. A method according to claim 1, wherein said user position is an assumed position of the user at the time of generation of said indication.

11. A method according to claim 1, wherein said outputs are audible announcements.

15

12. A method according to claim 1, wherein each device has an electromagnetic communications transceiver and a sound emitter and receiver, the relative locations of the devices being determined by determining the transit time of sounds sent between the devices using their sound emitters and receivers, the electromagnetic communications
20 transceivers being used to exchange timing reference signals between the devices for use in determining said transit times.

25

13. A method according to claim 1, wherein said ordering is determined independently by each device which is then responsible for determining when it is its turn in the output ordering to generate its output.

30

14. A method according to claim 1, wherein one said device is responsible for carrying out the determination of said ordering and for subsequently commanding each device to produce its output at the correct position in said ordering.

15. A method according to claim 1, wherein one said device is responsible for carrying out the determination of said ordering and for passing this ordering to the other devices, each

device then being responsible for determining when it is its turn in the output ordering to generate its output.

16. A method according to claim 1, wherein the relative locations of the devices is predetermined.

17. An announcement method for a plurality of devices, wherein the devices knowing their relative locations, and knowing or determining the position of a user when the latter produces an announcement prompt, take respective turns to make sound announcements about themselves in an order that proceeds clockwise or anticlockwise with respect to the user.

18. A system comprising a plurality of devices each provided with an output arrangement for producing a human-discernible output, the system having a control subsystem for causing the devices to produce their respective outputs in sequence, the control subsystem comprising:

- a detector for determining when a device output sequence is to be produced;
- a determination arrangement for determining an ordering in which these outputs are to be produced, this determination being effected taking account of the relative locations of the devices and an assumed or sensed user position, and such that the device output ordering progresses from device to device, between a first-to-output device and last-to-output device, in the same sense, clockwise or anticlockwise, with respect to said user position; and
- an output controller for causing the devices to produce their outputs in said ordering.

19. A system according to claim 18, wherein the determination arrangement is operative to determine both the first-to-output device and the sense of progression from device to device such as to minimise the angle subtended at said user position between the first-to-output device and last-to-output device.

20. A system according to claim 18, wherein the determination arrangement is operative to receive as an input parameter the identity of the first-to-output device.

21. A system according to claim 20, wherein the determination arrangement is operative to choose the sense of progression from device to device to minimise the angle subtended at said user position between the first-to-output device and last-to-output device.

5

22. A system according to claim 18, wherein said user position is the actual position of the user at the time said device output sequence is to be produced, the system further comprising a position-sensing arrangement for sensing the position of the user at the time the detector determines that a device output sequence is to be produced, the position-sending arrangement being operative to pass the sensed position of the user to the determination arrangement.

10

23. A system according to claim 22, wherein the detector is responsive to a user-produced sound to determine that a device output sequence is to be produced, the position-sensing arrangement comprising:

15

- a distributed array of sound sensors for sensing said user-produced sound, and
- means for determining the position of the user based on the relative times of receipt of the user-produced sound by the sound sensors.

20

24. A system according to claim 18, wherein said user position is a known location, the detector being operative to detect arrival of the user at this location and thereupon determine that said device output sequence is to be produced.

25

25. A system according to claim 18, wherein said user position is an assumed position of the user at the time of generation of said indication, the system further comprising a memory for storing this assumed position.

30

26. A system according to claim 18, wherein the output arrangements of the devices are operative to produce said human-discernible outputs as audible announcements.

27. A system according to claim 18, wherein the determination arrangement comprises a respective component in each device for independently determining said ordering, the

output controller also comprising a respective component in each device for causing that device to produce its output at its position in the ordering determined by the determination-arrangement component of the device.

- 5 **28.** A system according to claim 18, wherein both the determination arrangement and the output controller are provided in a single said device.

- 10 **29.** A system according to claim 18, wherein the determination arrangement is provided in a single said device, the devices further comprising respective communication units by which the determination arrangement can pass the ordering it determines to the other devices, and the output controller taking the form of a respective component in each device for causing that device to produce its output at its position in the ordering passed to the device from the determination arrangement.

- 15 **30.** A system according to claim 18, further comprising means for receiving data indicative of the relative locations of the devices.

- 20 **31.** A system according to claim 18, further comprising means for automatically determining the relative locations of the devices.

- 25 **32.** A device for producing a human-discernible output in sequence with outputs produced by other devices, the device comprising

- an output arrangement for producing a human-discernible output;
- a detector for determining when a sequence of device outputs is to be produced;
- 30 - a determination arrangement for determining an ordering in which said devices are to produce their outputs, this determination being effected taking account of the relative locations of the devices and an assumed or sensed user position, and such that the device output ordering progresses from device to device, between a first-to-output device and last-to-output device, in the same sense, clockwise or anticlockwise, with respect to said user position; and
- an output controller discerning outputs produced by other of said devices and for causing the device to produce its output in the appropriate position in said ordering.

33. A device according to claim 32, wherein the determination arrangement is operative to determine both the first-to-output device and the sense of progression from device to device such as to minimise the angle subtended at said user position between the first-to-
5 output device and last-to-output device.

34. A device according to claim 32, wherein the determination arrangement is operative to receive as an input parameter the identity of the first-to-output device.

10 35. A device according to claim 34, wherein the determination arrangement is operative to choose the sense of progression from device to device to minimise the angle subtended at said user position between the first-to-output device and last-to-output device.

36. A device according to claim 32, further comprising means for receiving user-input
15 position data from an external user-position determination arrangement.

37. A device according to claim 32, wherein said user position is an assumed position of the user at the time of generation of said indication, the system further comprising a memory for storing this assumed position.
20

38. A device according to claim 32, wherein the output arrangement of the device is operative to produce said human-discernible output as an audible announcement.

39. A device according to claim 32, further comprising means for receiving data indicative
25 of the relative locations of the devices.